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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/361,610	07/27/1999	AKIO KOBAYASHI	990864	5723

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EXAMINER

VILLECCO, JOHN M

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/361,610

Applicant(s)

KOBAYASHI ET AL.

Examiner

John M. Villecco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-21 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 22,23,28 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION II

Response to Arguments

1. Applicant has cancelled previously pending claims 1-17 and added new claims 18-29.

Therefore, a new grounds of rejection has been presented below for the new claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 18-20 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. Patent No. 5,694,167) in view of Tanaka et al. (U.S. Patent No. 6,130,420).**

4. Regarding *claim 18*, Hashimoto discloses an image pickup device capable of picking up images under different exposures and combining them to form an image with an increased dynamic range. More specifically, Hashimoto discloses a camera having an image area (10) which includes a vertical transfer register (12) for each column of photodiodes (11). Each of the transfer registers inherently includes a plurality of transfer areas. Additionally the image area includes a horizontal transfer register (40) connected to the output of the vertical transfer register (12). See Figures 1, 3, and 8. The sensor driving circuit (105) applies timing signals to the image sensor (103) as shown in Figure 4. Furthermore, as shown in Figure 2 signals for an

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exposure T1, indicating a first exposure, and T2, indicating a second exposure, are applied to the image sensor. As stated in column 3, lines 1-5, the first exposure is longer than the second exposure. A transfer pulses B and D are applied to the vertical transfer register (12) to read out the signals stored on the photodiodes (11) for each of the first and second exposures, respectively. Furthermore, transfer signals C and E are applied to the vertical transfer register to read out the charge to the horizontal transfer register. See column 3, lines 6-40. Additionally, when the charges of the second exposure are read out, they are read out into a vacant area of the vertical transfer register, since the charges of the first exposure have already been read out. The apparatus also includes a horizontal transfer signal (ΦH) for reading out charge stored on the horizontal register (40) (col. 3, line 38 and col. 7, lines 4-44). Finally, the signal processing system (200) operates to process the two image signals (S1, S2) into one image with an expanded dynamic range (col. 4, lines 13-14).

Hashimoto, however, fails to specifically disclose that the first reading signal reads out the light-receiving elements intermittently in a vertical direction. Tanaka, on the other hand, discloses that it is well known in the art to read out charge from a pixel in an intermittent fashion. Tanaka discloses two imaging modes: 1) an all-pixel read out mode, and 2) a thinned readout mode. In the thinned readout mode, groups of three pixels separated by four pixels are output from the vertical transfer register (col. 5, line 25 – col. 6, line 3). By reading out charges in the thinned readout mode, the camera is able to reduce power dissipation and conserve power. Therefore, it would have been obvious to read out the two exposures of Hashimoto in a similar fashion so that power dissipation is reduced and power is conserved.

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5. As for *claim 19*, Hashimoto discloses that each of the pixels is readout twice to form the two exposures. Therefore, the same pixels are used to form the two exposures. Furthermore, the charges accumulated in the photodiodes (11) of Hashimoto are read out after the vertical transfer of the first electric charge is started.

6. With regard to *claim 20*, Tanaka discloses that a group of pixels where $N=3$. Since Hashimoto disclose reading out the first exposure and then the second exposure, the group of three pixels of the first exposure would move at least a distance N until the second electric charge is read out. More specifically, the charge of the group N of the first exposure is read completely out of the vertical transfer register. Therefore, the first electric charge moves at least a distance N .

7. *Claim 24* is considered substantively equivalent to claim 18 and thus was analyzed and discussed above. Please see the discussion of claim 18 above.

8. *Claim 25* is considered substantively equivalent to claim 19 and thus was analyzed and discussed above. Please see the discussion of claim 19 above.

9. *Claim 26* is considered substantively equivalent to claim 20 and thus was analyzed and discussed above. Please see the discussion of claim 20 above.

10. **Claims 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. Patent No. 5,694,167) in view of Tanaka et al. (U.S. Patent No. 6,130,420) and further in view of Uejima et al. (Japanese Publ. No. 09-298685 A).**

11. Regarding *claim 21*, as mentioned above in the discussion of claim 20, both Hashimoto and Tanaka disclose all of the limitations of the parent claim. However, neither of the

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aforementioned references discloses that the camera includes a monitor for displaying the image based on the first image signal. Uejima, on the other hand, discloses that it is well known in the art to include a monitor to view synthesized image with an expanded dynamic range. The device of Uejima includes a monitor (13) for displaying an image of at least two screens of different exposure amounts. See the abstract. A monitor allows a user to view the image that they have just captured. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a monitor so that the user can view the image which he/she has just captured.

12. **Claim 27** is considered substantively equivalent to claim 21. Please see the discussion of claim 21 above.

Allowable Subject Matter

13. **Claims 22-23 and 28-29 are objected to** as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claims 22 and 28**, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest a third exposure and a fourth exposure performed using a shutter member arranged in front of the imager.

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15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any response to this final action should be mailed to:

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 308-6306, (for formal communications; please mark "**EXPEDITED PROCEDURE**"; for informal or draft communications, please label "**PROPOSED**" or "**DRAFT**")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Villecco whose telephone number is (703) 305-1460.

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The examiner can normally be reached on Monday through Thursday from 7:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service desk whose telephone number is (703) 306-0377.



JMV

9/12/03



VU LE
PRIMARY EXAMINER